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PRE-APPEAL BRIEF REQUEST FOR REVIEW		Docket Number (Optional) PTB-3687-114
Application Number 10/534,493	Filed June 6, 2005	
First Named Inventor Bettinzoli		
Art Unit 3749	Examiner Andrew D. St. Clair	
<p>Applicant requests review of the final rejection in the above-identified application. No amendments are being filed with this request.</p> <p>This request is being filed with a notice of appeal.</p> <p>The review is requested for the reason(s) stated on the attached sheet(s). Note: No more than five (5) pages may be provided.</p>		
<p>I am the</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;"> <input type="checkbox"/> Applicant/Inventor </div> <div style="width: 45%; text-align: right;"> <u>/Paul T. Bowen/</u> Signature </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <input type="checkbox"/> Assignee of record of the entire interest. See 37 C.F.R. § 3.71. Statement under 37 C.F.R. § 3.73(b) is enclosed. (Form PTO/SB/96) </div> <div style="width: 45%; text-align: right;"> <u>Paul T. Bowen</u> Typed or printed name </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <input checked="" type="checkbox"/> Attorney or agent of record <u>38,009</u> (Reg. No.) </div> <div style="width: 45%; text-align: right;"> <u>703-816-4019</u> Requester's telephone number </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <input type="checkbox"/> Attorney or agent acting under 37CFR 1.34. Registration number if acting under 37 C.F.R. § 1.34 _____ </div> <div style="width: 45%; text-align: right;"> <u>February 19, 2009</u> Date </div> </div> <p>NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.*</p> <div style="display: flex; justify-content: space-between; margin-top: 10px;"> <div style="width: 45%;"> <input checked="" type="checkbox"/> *Total of <u>1</u> form/s are submitted. </div> </div>		

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**STATEMENT OF ARGUMENTS IN SUPPORT OF
PRE-APPEAL BRIEF REQUEST FOR REVIEW**

Claims 1-6 and 10-14 were rejected under 35 U.S.C. §102(b) over De'Longhi (EP 0485645). In addition, claims 7 and 8 were rejected under 35 U.S.C. §103 over De'Longhi, and claim 9 was rejected under 35 U.S.C. §103(a) over De'Longhi in view of Bettinzoli et al. (WO 02/02991). The final rejection includes the errors that follow.

Error #1 De'Longhi does not teach or suggest the claimed at least one horizontal mixing chamber with a radial Venturi effect.

Independent claim 1 is directed to a gas burner for cookers of the type fitted to a cooking hob comprising a central body having a first flame distribution ring and at least one external body fluidly separated from the central body and substantially concentric with it, having at least one second flame distribution ring. Claim 1 also sets forth means for separately feeding the mixture of primary air and gas to said central body and to said at least one external body, wherein the means for feeding the at least one external body comprises at least one horizontal mixing chamber with a radial Venturi effect.

Similarly, independent claim 14 is directed to a gas burner for cookers comprising a central body having a first flame distribution ring, and at least one external body, fluidly separated from the central body and substantially concentric with it, having at least one second flame distribution ring, as well as at least one horizontal mixing chamber with a radial Venturi effect to separate feed the mixture of primary air and gas to said central body and to said at least one external body.

De'Longhi does not teach or suggest the claimed at least one horizontal mixing chamber with a radial Venturi effect. According to the Examiner, the tube 11 of De'Longhi is considered to provide a radial Venturi effect in that it provides a Venturi effect by means of a tube of varying radius.

Applicant respectfully traverses the Examiner's interpretation as De'Longhi is clearly directed toward an axial vertical Venturi tube and not a horizontal mixing chamber with a radial Venturi effect as set forth in independent claims 1 and 14. Moreover, Applicants respectfully submit that the terms "axial Venturi" and "radial Venturi" are terms of art commonly known to those of ordinary skill in the field of cooking. See, e.g., WO 2006/077058 A1 (copy enclosed) which specifically states that "the burner Venturi is formed in combination with the inner surface 23 of the cap 5, directly on the flame divider 4, with a vertical portion 21 and a radial portion 22. This eliminates the need to apply vertical Venturis, hence reducing cost. The radial Venturi also enables the height of the bracket to be

reduced, with evident constructional and cost advantages”. (Underlining added.) See WO ‘058 page 5, lines 6-11.

Thus, as previously advanced by Applicant, those in the field of the cooking art readily recognize the difference between axial/vertical Venturi and radial/horizontal Venturi. Moreover, another example of a radial Venturi is shown and described in French Patent No. 1197178 (of record), which was discussed in Applicant’s first response.

Unfortunately, the Examiner has failed to appreciate the difference between axial Venturi and radial Venturi. Instead, the Examiner has invented his own definition which is inconsistent with the application and the industry in general.

It should also be pointed out that the “Background” section of the present application takes into account the teachings of De’Longhi et al. Specifically, see page 3, lines 17-30 of the original PCT Publication which informs the reader that to guarantee a correct mixing of the primary air with the gas fuel and a suitable pressure for feeding this mixture in the burner, there are two long vertical pipes [10, 11] with an axial Venturi effect, respectively feeding one central ring of flames and one external ring of flames concentric with the central one. The supply of primary air, moreover, is accomplished by taking air from below the cooking hob so as to avoid fluid-dynamic interferences with the flows of secondary air and with the rings of flames. The De’Longhi solution involves a large height of the burner and the need to have cooking hobs with the possibility of an inflow of primary air from inside them.

Moreover, as admitted by the Examiner and also specified in De’Longhi (column 3, lines 25-33), De’Longhi’s mixture is constituted by mixing ducts 10, 11, each of which has a truncated-cone configuration, the smaller diameter of which faces the respective injectors. Applicants respectfully submit that one of ordinary skill in the art interpreting De’Longhi would understand it to mean that the mixing chamber in De’Longhi is constituted by a vertical truncated-cone shape duct 10, 11 divergent from the gas injector, wherein the gas mixes with the primary air sucked from below the cooking top.

In contrast to what the Examiner states, the chamber placed at the end of the vertical divergent duct is not a mixing chamber, since the gas-primary air mixture is previously obtained upstream of the Examiner’s so called “mixing chamber”, i.e., in the vertical divergent ducts 10, 11. This is a fluid-dynamic effect, well known in the art as an axial Venturi effect, caused by the geometrical shape of the ducts 10, 11.

Therefore, even if the gas-primary air mixture flowing out from the duct 10, 11 of De’Longhi encounters a further radial expansion in the chamber placed downstream of the vertical duct, mixing of the gas with the primary has already been carried out in the vertical

divergent duct. The downstream chamber is not described or depicted as being suitable to cause a further radial Venturi effect. Stated differently, the chamber which is above the tubes does not have suitable dimensions to establish such a Venturi effect, and thus this chamber in De'Longhi is not a mixing chamber, much less a mixing chamber with radial Venturi effect, as claimed.

Moreover, De'Longhi does not describe a reduced-height horizontal chamber suitable to act as a radial expansion chamber for a radial Venturi. As specifically argued in Applicant's prior traversal, De'Longhi's axial Venturi tube is to be contrasted with a radial Venturi effect such as disclosed in French Patent No. 1197178. Axial and radial Venturis have very different fluid-dynamic behaviors, and they would not be confused with one another by one of ordinary skill in the art. Certainly, one of ordinary skill in the art would not characterize the De'Longhi tubes as radial Venturis. In any event, the original application specifically distinguishes the claimed radial Venturi from the axial Venturi of De'Longhi. The final rejection simply ignores this definition.

In short, for establishing a Venturi effect in a gas burner, in order to effectively mix the primary air with the combustible gas, it is necessary to have a chamber-placed downstream of a flow passage with a reduced area section, in which the fluid encounters a gradual expansion. Such a chamber is the vertically divergent duct 10, 11 in De'Longhi, while it is the claimed horizontal mixing chamber with radial Venturi effect in independent claims 1 and 14. They are two distinct solutions, with distinct technical behaviors, having only the "Venturi" name in common.

For this reason alone, Applicant respectfully submits that De'Longhi does not anticipate independent claims 1 or 14, or the dependent claims.

Error #2 De'Longhi does not teach one or more inlets for the primary air located above the cooking hob, as recited in claim 2.

Claim 2 depends on claim 1 and specifies one or more inlets for the primary air located above the cooking hob. De'Longhi does not teach or suggest this subject matter. The Examiner points to inlets 18 as satisfying the claim limitation. However, contrary to what the Examiner states, air inlets in the burner disclosed in De'Longhi aim allowing the passage of secondary air directed towards the flames, and not the passage of primary air. Again, "primary" air and "secondary" air have specific definitions in the art. One of ordinary skill in the art would not have confused De'Longhi's secondary air inlet 18 with the primary air inlet which is located at element 29 in Figure 2 of De'Longhi.

Specifically, “primary air” is that amount of air that is premixed with the combustion gas, flowing out from an injector, upstream of the burner flames. Primary air, in order to avoid combustion with the gas burner body, is an air amount less than the stoichiometric amount necessary to start the combustion with a combustible gas flow. In order to have the combustion of the gas, the mixture of gas-primary air should be further fed with a secondary amount of air, called “secondary air”.

Usually, such secondary air is simply taken by the environment air surrounding the flame spreaders of the gas burner.

In brief, primary air is mixed with the combustible gas upstream to the burner flame spreader and it does not cause the combustion of the combustible gas, while secondary air is fed to the mixture of gas-primary air at the holes (or slits) of the burner flame spreader and it has the purpose of allowing the combustion of the combustible gas.

Moreover, referring again to Applicant’s original specification, page 3, lines 17-30, the supply of primary air is accomplished by taking air from below the cooking hob to avoid fluid-dynamic interference with the flow of secondary air and the ring(s) or flames. Thus, De’Longhi does not teach one or more inlets for the primary air located above the cooking hob, per claim 2.

Accordingly, De’Longhi does not teach or suggest the subject matter of dependent claim 2.

It is noted that claim 9 was rejected under 35 U.S.C. §102(a) over De’Longhi in view of Bettinzoli et al. However, Bettinzoli et al. does not make up for the deficiencies noted above in respect to De’Longhi.

Moreover, as previously advanced and in Applicant’s May 2, 2008 response, it is clearly evident that radial Venturi tubes were considered to be unsuitable to provide the correct thermo-dynamic conditions of the gas-primary air mixture, as well as the correct mixing and diffusion conditions of such a mixture, in a multiple flame crown gas burner in which the flame crowns are to be fed separately. In particular, as set forth in the original specification, “The use of the horizontal mixing chamber with radial Venturi effect as a means for feeding the ring or rings of circumferential flames involves not only a limitation of the height of the external body, ... but also (and surprisingly) an efficacious mixing of the primary air with the gas fuel and an excellent subsequent distribution of the mixture of primary air and gas in the external body to feed the ring or rings of circumferential flames”. See page 6, lines 8-15 of the original PCT application.

As a result of the above, there is simply no support for the rejection of Applicant's claims. Applicant respectfully requests that the Pre-Appeal Panel find that the application is allowed on the existing claims.

Attachment:

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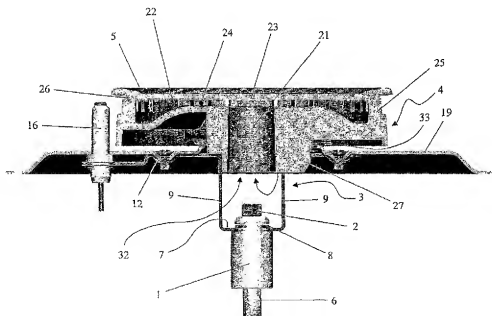
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Notes on Codes and Abbreviations" appearing at the beginning
of each regular issue of the PCT Gazette.

(54) Title: GAS BURNER, IN PARTICULAR FOR DOMESTIC COOKING APPLIANCES



(57) Abstract: For domestic appliances, a gas burner provided with a gas arrival pipe fixed to an injector support with which an injector is associated, characterised in that the lower portion of the burner venturi and the injector support are centered within another element (3) formed in one piece.

GAS BURNER, IN PARTICULAR FOR DOMESTIC COOKING APPLIANCES

The present invention relates to a gas burner, in particular for domestic cooking appliances.

Various types of gas burners exist for cookers, from those intended for
5 top of the range cookers and hence of high performance and of costly material
construction, to those intended for medium and bottom of the range cookers
and hence of lowest possible cost construction.

However even within this latter product range there is a tendency to
seek to construct products which always ensure good performance, such as
10 very low CO values, very high thermal efficiency, ease of use and easy
cleaning, while at the same time seeking to maintain a very low cost,
compatible with that of very low-cost finished products such as those present
on the South American market.

Within this product range, commercially available cookers have a gas
15 system based on the cross arm concept.

This gas system is formed from various components:

- a normally L- or U-shaped pipe known as the gas ramp, which carries the
gas to the cooker interior and is provided on its front part with holes to
which the control valves are fixed,
- 20 - tubes carrying the gas from the valves to the injectors;
- two suitably bent steel strips, known as the cross arms, which are welded
transversely to the gas ramp and are hence disposed parallel to the front
part of the cooker. These cross arms are provided with holes, in each of
which an injector and the relative gas arrival tube are positioned.

25 The gas system hence consists of a sub-assembly consisting of the
ramp with relative cross arms welded together, control valves mounted on the

ramp, and gas tubes which connect the valves to the injectors, these being fixed to the cross arms in any manner.

This sub-assembly is fixed to the cooker structure by screwing the outer ends of the cross arms to the lateral sheet metal parts of the cooker.

5 The sheet metal cooker top is then fixed to the structure. The cooker top presents holes corresponding with the injectors, to allow passage of the venturi tube attached to the burner base.

The burner also comprises the venturis and the base, usually in the form of two pieces of sheet metal joined together, and a flame divider, also of
10 sheet metal or of pressed aluminium.

This system presents certain drawbacks, and in particular:

- alignment between the injector and the venturi is not assured, particularly if, welded to the cross arm, there is a further bridge piece upperly presenting a hole enabling the venturi tube to be centered on the injector; this often
15 causes off-centre gas distribution so that the flames can be seen to be non-uniform,
- gas leakage problems and problems of alignment with the top of the burner, as in some cases the injector is fixed directly on the cross arm,
- in other cases a die-cast aluminium support is used, also acting as the
20 venturi, on which the base is fixed and about which the base is centered; this ensures better alignment, however the constituent parts of the burner are of large number and costs are higher.

Another drawback consists of the fact that, if present, the ignition plug is normally fixed to the cooker top and is hence not subjected to centering
25 about the burner.

An object of the invention is to create a gas sub-assembly consisting of only a few parts and hence of low production cost, but which at the same time ensures good operation and practicality of use, such as ease of cleaning and of treatment of the movable parts.

- 5 This and further objects which will be apparent from the ensuing description are attained according to the invention by a gas burner for appliances, as described in claim 1.

A preferred embodiment of the present invention is described in detail hereinafter with reference to the accompanying drawings, in which:

- 10 Figure 1 is a longitudinal section through the burner,
Figure 2 is a perspective view of the flame divider,
Figure 3 is a perspective view of the bracket,
Figure 4 is a plan view of the cooker top from above, and
Figure 5 shows a variant of the bracket.

- 15 As can be seen from the figures the burner is composed substantially of an injector support 1, an injector 2, a bracket 3, a flame divider 4 and an enamelled cap 5.

- An aluminium pipe 6, on which the injector support 1 is fixed by compression and which is connected to the control valve, not shown in the
20 drawings, is screwed to the injector 2.

The bracket 3 is of U-shape and lowerly presents a horizontal surface 7 comprising a hole in which the injector support 1 is locked by means of a spring 8.

- The surface 7 extends into two vertical walls 9 and upperly presents
25 two flanges containing two opposing holes 11 through which screws 12 are screwed for fixing the bracket 3 to the upper sheet metal of the cooker top 14.

One of the two flat flanges 10 of the bracket 3 presents an extension 15 in which two seats are provided for possibly housing the ignition plug 16 and the thermocouple 18.

In one side of the bracket 3 a slot 19 is present, passing through both
5 a flange 10 and a vertical wall 9.

The cooker top 14 upperly presents a raised collar 20, external to the cooker top 14 there being provided the flame divider 4 on which the enamelled closure cap 5 rests.

The flame divider 4 centrally presents a frusto-conical vertical conduit
10 21, which forms the first portion of the venturi and communicates upperly with a portion 22 shaped to form, together with the inner surface 23 of the cap 5, a radially extending horizontal conduit 24 producing a venturi effect.

The flame divider 4 externally presents an edge 25 along which a series of ports 26 are present for exit of the air-gas mixture, to form a flame
15 ring.

In its lower portion external to the conduit 21, the flame divider 4 presents a centering fin 27, two walls 28 and 29, and bearing surfaces 30 and 31.

When the flame divider 4 is positioned on the bracket 3, the centering
20 rib 27 rests in the seat 19, the two walls 28 and 29 are interposed centrally between the walls 9 of the bracket 3, and the surfaces 30 and 31 rest on the bracket flanges 10.

Hence all the constituent parts of the burner essential for its proper operation are all centered on a single component, the bracket 3, which is
25 constructed in one piece to ensure that the system is coaxial.

In this manner the frusto-conical conduit 21 of the flame divider 4, forming the first portion of the venturi, is perfectly aligned with the injector 2 by virtue of the fin 27 and the walls 28 and 29. This enables perfect gas distribution to be achieved along the ports 26, with a resultant regular and
5 uniform flame ring.

The burner venturi is formed, in combination with the inner surface 23 of the cap 5, directly on the flame divider 4, with a vertical portion 21 and a radial portion 22. This eliminates the need to apply vertical venturis, hence reducing cost.

10 The radial venturi also enables the height of the bracket 3 to be reduced, with evident constructional and cost advantages.

Moreover, the flame divider 4 rests on the bracket 3 and not on the cooker top 14; this means that less heat is transmitted to the cooker top, hence resulting, if this latter is of stainless steel sheet construction, in lesser
15 yellowing of the sheet metal.

The system is also very easy to clean: in this respect, if liquids spill over from the pan, the rim 20 provided on the cooker top 14 prevents penetration of the water into the interior of the cooker. The rim 20 also prevents dirt penetration into the interior when cleaning the cooker top.

20 There are only two movable parts: the flame divider 4 and the enamelled cap 5, both easily cleanable either by hand or in a dishwasher.

After cleaning, positioning the flame divider 4 in its seat in the bracket 3 is particularly easy and unmistakable because of the rib 27 and the particular shape of the hole in the sheet metal of the cooker top 14.

25 With the embodiment shown in the drawings the primary air 32 required for mixing with the gas originates from the interior of the cooker.

In a variant, primary air is taken from outside the cooker (primary air 33).

To achieve this, the bracket 3 merely has to be made from a portion of cylindrical pipe, shaping the walls 28 and 29 and the surfaces 30 and 31 in a manner suitable to create air passageways, then raising the flame divider 4 a further few millimetres from the cooker top 14.

In a further variant, instead of forming a single bracket for each burner, the two traditional cross arms are shaped to form two brackets in each of them (see Figure 5). In this manner, even if the cross arms are screwed to the side structure of the cooker, the burners are centered about the cross arm, to always provide injector-venturi alignment.

Special burners, such as fish kettle and double or triple ring burners, are also used on medium and low cost cookers, consequently the constructional concept described in the present patent is also valid for special burners.

C L A I M S

1. For domestic appliances, a gas burner provided with a gas arrival pipe fixed to an injector support with which an injector is associated, characterised in that the lower portion of the burner venturi and the injector support are centered within another element (3) formed in one piece.
2. A burner as claimed in claim 1, characterised in that said element (3) is formed from a sheet metal strip.
3. A burner as claimed in claim 1, characterised in that said sheet metal strip is elongated, with more than one element (3) being formed on it.
- 10 4. A burner as claimed in claim 1, characterised in that the burner is composed substantially of an injector support (1), an injector (2), an element (3), a flame divider (4) and a cap (5).
5. A burner as claimed in claim 1, characterised in that the element (3) is U-shaped and carries in its lower part a hole for locking the injector support
- 15 (1).
6. A burner as claimed in claim 6, characterised in that the element (3) is provided with flanges (10).
7. A burner as claimed in claim 4, characterised in that the flame divider (4) lowerly presents a centering rib (27), walls (28, 29), and bearing surfaces
- 20 (30, 31) which cooperate with the flanges (10) of the element (3) by resting on them.
8. A burner as claimed in claim 4, characterised in that the flame divider (4) and the cap (5) define a radial venturi portion.
9. A burner as claimed in claim 4, characterised in that the flame divider
- 25 presents along its outer edge a series of ports for exit of the air-gas mixture, to form a flame ring.

10. A burner as claimed in claim 1, characterised in that the primary air required for mixing with the gas originates from the interior (32) of the cooker.
11. A burner as claimed in claim 1, characterised in that the primary air required for mixing with the gas originates from the exterior (33) of the cooker.
- 5 12. A burner as claimed in claim 1, characterised in that the element (3) presents an extension (15) on which the ignition plug (16) is housed.
13. A burner as claimed in claim 1, characterised in that the element (3) presents an extension (15) on which the ignition plug (16) and the thermocouple (18) are housed.
- 10 14. A burner as claimed in claim 1, characterised in that the flame divider presents several mutually concentric flame rings.
15. A burner as claimed in claim 1, characterised in that the flame divider is of fish kettle shape.
16. A burner as claimed in claim 1, characterised in that the lower portion of
15 the venturi is of frusto-conical shape.
17. A burner as claimed in claim 1, characterised in that the lower portion of the venturi is of cylindrical shape.

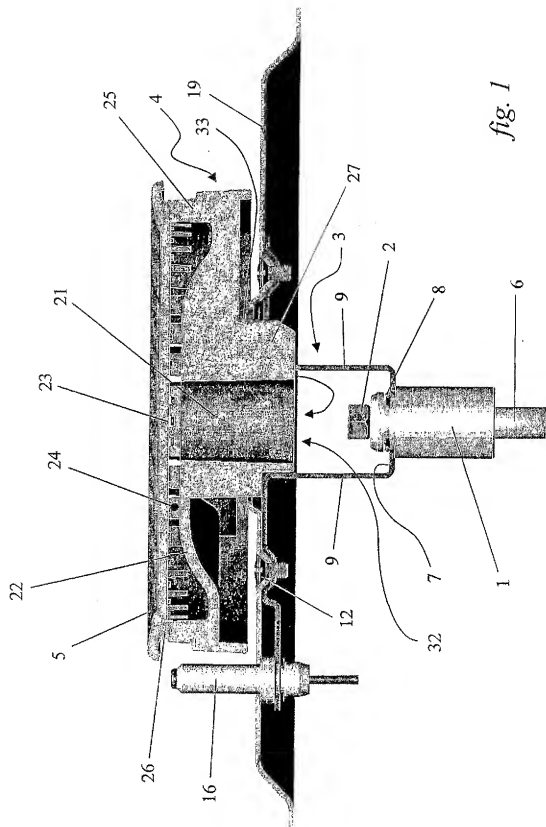


fig. 1

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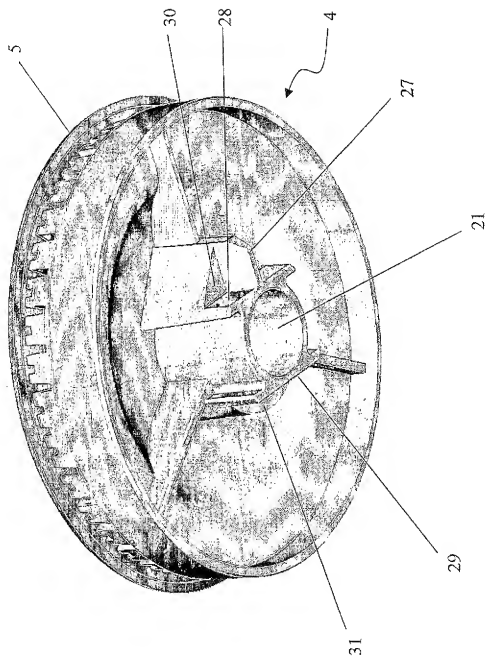


fig. 2

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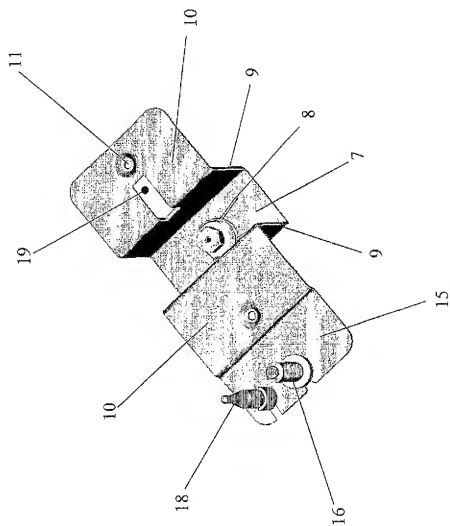


fig. 3

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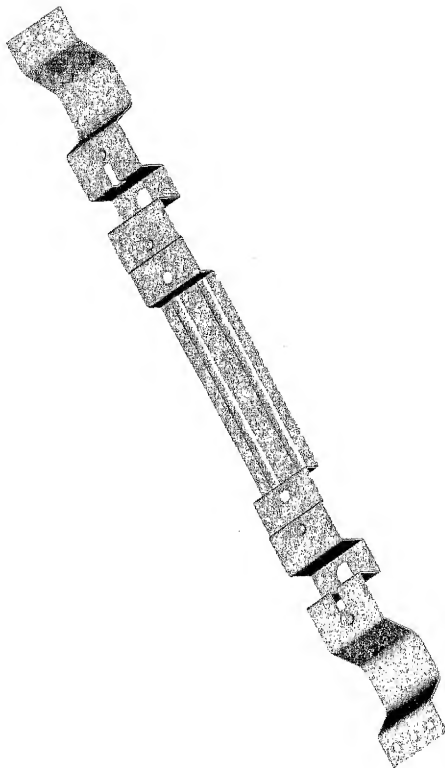


fig. 5

INTERNATIONAL SEARCH REPORT

 International application No
 PCT/EP2006/000304

 A. CLASSIFICATION OF SUBJECT MATTER
 INV. F23D14/06 F24C3/08

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

 Minimum documentation searched (classification system followed by classification symbols)
 F23D F24C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1 406 043 A (BURNER SYSTEMS INTERNATIONAL) 7 April 2004 (2004-04-07)	1,4-6,
Y	paragraphs [0006], [0029], [0030], [0041]; figures 2,5	8-13,16
		2,3,7,
		14,15,17
Y	DE 37 12 001 A1 (BALAY S.A.) 15 October 1987 (1987-10-15)	2,3
	column 4, line 54 - column 5, line 7; figures 8-10	
Y	WO 00/40900 A (ARDEM P&IDOT; KALAYCI, CEMALETTIN; UMUR, HASAN; GOECER, MEHMET, BARI&S) 13 July 2000 (2000-07-13)	7
	page 4, paragraph 2	
	page 4, paragraph 4 - page 5, paragraph 1; figures 2,4,6	
	----- -/-	

☒ Further documents are listed in the continuation of Box C.

☒ See patent family annex.

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INTERNATIONAL SEARCH REPORT

International application No
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